The Future Of Public Transport
In A Net Zero World



Integrated technology solutions to decarbonise, connect and future-proof transport networks

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Public Transport at a **Crossroad**

The next decade will determine whether public transport systems evolve - or fall behind.“

Australia’s public transport networks are at a pivotal point.

As cities and regions grow, the challenge is not just to expand services - but to make them smarter, environmentally sustainable, and truly integrated.

Commuters increasingly expect seamless travel across multiple modes; all tied together through integrated ticketing and real -time journey planning.

Yet integration remains uneven, with legacy systems, planning, and fare structures holding back from a more efficient and convenient public transport system. At the same time, the sector is under mounting pressure to decarbonise, with transport being one of Australia’s largest and fastest-growing sources of emissions, prompting urgent calls for low- and zero-emissions solutions.

But transitioning to electric fleets requires more than new vehicles - it demands infrastructure upgrades, smarter scheduling, and effective funding models.

Amidst these shifts, transport operators also face growing revenue constraints, digital disruption, and workforce shortages, especially in skilled roles such as drivers, planners, and EV technicians.



Challenges Facing Public Transport

- **Legacy infrastructure and system fragmentation**
- **Emissions and electrification**
- **Revenue and workforce pressures**

One Journey - **Multiple Modes**

As our cities become overcrowded and too expensive to live, our outer metropolitan and regional areas are rapidly expanding.

As a result, many people, including those who work in essential services, now face longer travel times to get to work and often require two or more modes of transport.

Without safe, reliable and cost-effective travel options, cities will begin to lose essential workers and others who are disadvantaged due to cost and inconvenience.

At present, the fragmentation of the different modes of transport does not allow 'beginning to end' of journey planning.

System integration across all platforms can not only save money for operators and passengers, but can utilise data to save passengers valuable time by ensuring the best possible linkage of services.

A Best Practice Approach

INIT's solution to 'one journey - multiple modes' integration can be found in Karlsruhe, Germany.

Working with several transport providers including rail, bus, bikes and car rentals, INIT developed a single mobility platform to facilititate planning, booking and payment.

The moblity platform powers the 'Regiomove' app, which facilitates seamless intermodal travel into one single platform. This app provides commuters with a streamlined, cost-effective way to get to their destination and is a proven solution to reducing car usage.

The app suggests possible routes using a combination of public and active transport travel options such as rental bicycles instead of using a private car (and indicates the associated CO^2 emissions for each travel option).

Passenger movements are tracked and used to determine what service areas, such as information terminals, e-charging stations or bicycle service stations, are installed and where.

Due to its success, further integration of other forms of transport such as on-demand minibuses and car sharing of electric vehicles is already in planning stage – not to mention neighbouring regions and their transport providers.



Electrification at Scale for a **Net Zero Fleet**

As noted in the NSW Government's recent Net Zero Commission 2024 report, transport has been identified as a key contributor to emissions, requiring 'priority' status for emissions reduction to meet 2030-35 targets.

Across Australia and New Zealand, governments are working towards increasing their respective bus fleets to reduce emissions. For example, the NSW government has recently ordered 319 electric buses as the first step towards its replacement target of over 8,000 buses by 2047, while Victoria is committed to 100 percent of all new purchases being electric.

A conversion of such scale brings with it many challenges, namely real-time monitoring of battery levels that may need urgent recharging, rapid replacement services as well as the conversion of current diesel filling stations to charging units. Electrification of bus fleet systems also brings with it new opportunities for shift management and upskilling of the workforce.

INIT is already in discussions with transport companies in Australia and New Zealand, given their experience managing these transitions in other markets.

A Best Practice Approach

With Hamburg planning to complete its e-mobility transition by 2030, INIT's technology is at the forefront of helping make this a reality.

INIT's smart and effective 'all-in-one' solution comprises all aspects of electromobility, including operational processes such as predicting energy demand, actively monitoring vehicles' range on their routes, and supporting the efficient management of e-buses.

The solution helps transport operators with various requirements, including the ability to:

- apply peak shaving, to limit the maximum load and costs
- ensure sufficient operational flexibility
- deliver quick replacement services to buses running low
- ensure optimal charging capabilities to increase battery life
- monitor the functionality of the charging infrastructure
- integrate with different charging technology and vehicles.



Understanding e-Bus Operations

It goes without saying that drivers and service staff need to receive training on e-mobility.

Aside from familiarising themselves with new safety requirements and technology, they also need to deepen their understanding of how e-buses operate.

In Hamburg, a range of in-depth training courses were developed and introduced, including specific training in emergency management which was coordinated with the Hamburg Fire Academy.

Fleet electrification is more than vehicle procurement - it's a transformation in infrastructure, scheduling, driver support, and system design. INIT brings proven experience delivering this transformation across global cities.



Real-time Respons
needs and disrupti

Many of the world's transit systems are ageing, with disruptions becoming increasingly common.

Unfortunately, many of these issues are only identified when something unexpected goes wrong, such as rail lines or roads being closed, causing major disruptions for the travelling public.

Such incidences require alternative services to be deployed, a logistical nightmare for those dealing with it who must rely on imprecise information between different agencies and local drivers to arrange replacement services.

Modern technology solutions linked to GPS systems can help respond to these situations as and when they happen.

These systems, which contain real-time data of passenger movements and destinations, provide transport planners with the information needed to ensure timetabling is responsive to passenger needs.

Not only does this provide commuters with better services when they need them, it can also help with removal of 'ghost services' which cost governments and companies money that could be better applied elsewhere.

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A Best Practice Approach

With INIT's fleet management and real-time passenger information solutions (MOBILE-ITCS and RESPONSEassist) such disruptions can become under control at the touch of a button.

When disruptions occur, dispatchers must act quickly, initiate dispatching measures, and provide passengers with up-to-date information so they can plan accordingly.

Managing communication channels manually demands substantial time and effort. For companies facing this challenge, RESPONSEassist is an indispensable tool as it creates passenger information automatically and publishes it through a multitude of media directly from dispatching measures.

With these solutions, a public transport company does not need a specific member of their control centre staff to be solely responsible for passenger information.

Both the company and commuters can receive key information on their device including the location of a disruption (including cancelled stops, time, and replacement services). Additionally the operator can document incident and response reports in real-time to facilitate better planning of incident management in the future.

» **INIT's fleet management and real-time information solutions deliver auto dispatch alerts, multichannel passenger updates, real-time service reporting and GPS-linked driver guidance**



Smarter Ticketing, **Stronger Systems**

Running a complex mass transit system is a costly but essential public service. Infrastructure needs constant servicing and upgrading and eventually, replacement.

New suburbs and business hubs are constantly being developed requiring new services. Without an effective public transport system, we can't get to work or school, businesses would suffer, and the economy would grind to a halt.

But when we talk about upgrading transport infrastructure we rarely associate this with the system needed to provide a better, more efficient service.

Efficient, integrated ticketing systems do more than just receive payment from commuters.

Modern ticketing systems help transport planners ensure that the right services meet the demand needed across society.

More importantly, they collect the fares that allow governments and transport providers to continue these services and upgrades.

A Best Practice Approach

One of the first companies to deploy a fully 'Account Based Ticketing' capable fare technology, INIT has its leading edge solutions to modern ticketing being used throughout the world.

Its system for the Tri-County Metropolitan Transportation District of Oregon (TriMet), is considered one of the most advanced transit systems in the US.

This is because they chose INIT as their partner to supply and implement a regional, multi-media e-fare system.

It is a great example of multiple companies across two states and regions, working together to provide an integrated, transparent and cost-effective way to travel whether around town or over longer distances.



INIT was among the first suppliers globally to integrate a regional account-based virtual transport smart card, designed to operate via a smartphone wallet app

As TriMet continues to blaze new trails, transport users are reaping the advantages.

Riders benefit from more convenience and better ticket prices, as well as the opportunity to easily use contactless bank and smart cards, and mobile phones to pay fares. The result is a smoother and more economically managed transit network, increased mobility and better transportation services.

TriMet was the first US-based customer to benefit from a fully integrated operations management, real-time passenger information and e-fare system from INIT



Benefits being realised by integrated solution

Open Payments: Riders can pay for fares using a contactless bank card, mobile wallet such as Android Pay, Apple Pay or Google Pay, as well as with a virtual smart card within Google Pay and Apple Wallet.

Real-time fare processing: INIT's back-end processing software serves as the core intelligence for the account-based and open payment fare system. Off-line processing is another added benefit of the INIT system. In the event of a network outage, fare payments can still be processed ensuring revenues are not lost.

Multi-agency revenue reconciliation: Manages and processes fares in real-time, recognises and processes revenue sharing, as well as reconciliations for all three agencies.

Fare Capping to promote public transport and help with the cost of living: INIT's back-end seemlessly manages fare capping, automatically calculating the lowest possible fare for passengers. For example, for TRIMET, INIT's back-end calculates all trips taken by each passenger on a daily and monthly basis and determines the lowest cost option, by comparing single trip, day and monthly fares.

A day in the life of a commuter in the near future

Suzie is a nurse at an inner-city hospital. She lives in a suburb 40km from her daily destination and is often on call, meaning she may be asked to work night shifts if required.

Morning Commute

- Checks weather update to decide the best way to travel to work and plans journey
- Checks her transport provider app, powered by INIT, to find out the time of the next available bus service in real-time
- One tap on with smart-watch - Catches bus to multi-modal terminal
- Connects to a light rail service
- Alights for connecting bus service
- Takes e-bike to hospital where she taps off
- The reader advises her of how much the entire journey cost her

What would have been a journey consisting of four routes, each charged separately and with no knowledge of service times, leading to missed connections, is now one journey, planned that morning at an agreed price.



Returning Home

After her shift, Suzie needs to swing past the shop before getting home, to pick up her outfit for a concert she is booked to. She asks her app, powered by INIT's solutions, to plan the best route home given the time, services available and connection times.

The app suggests replacing her e-bike with a shuttle service as it is getting dark and storm clouds are approaching.

The recommended route includes: a shuttle service to nearest bus stop, bus to light rail, light rail to bus hub, bus to shopping centre and a bus from shopping centre to home. The cost of this route has been calculated, and she knows her remaining balance to help make the best choice to suit her needs.

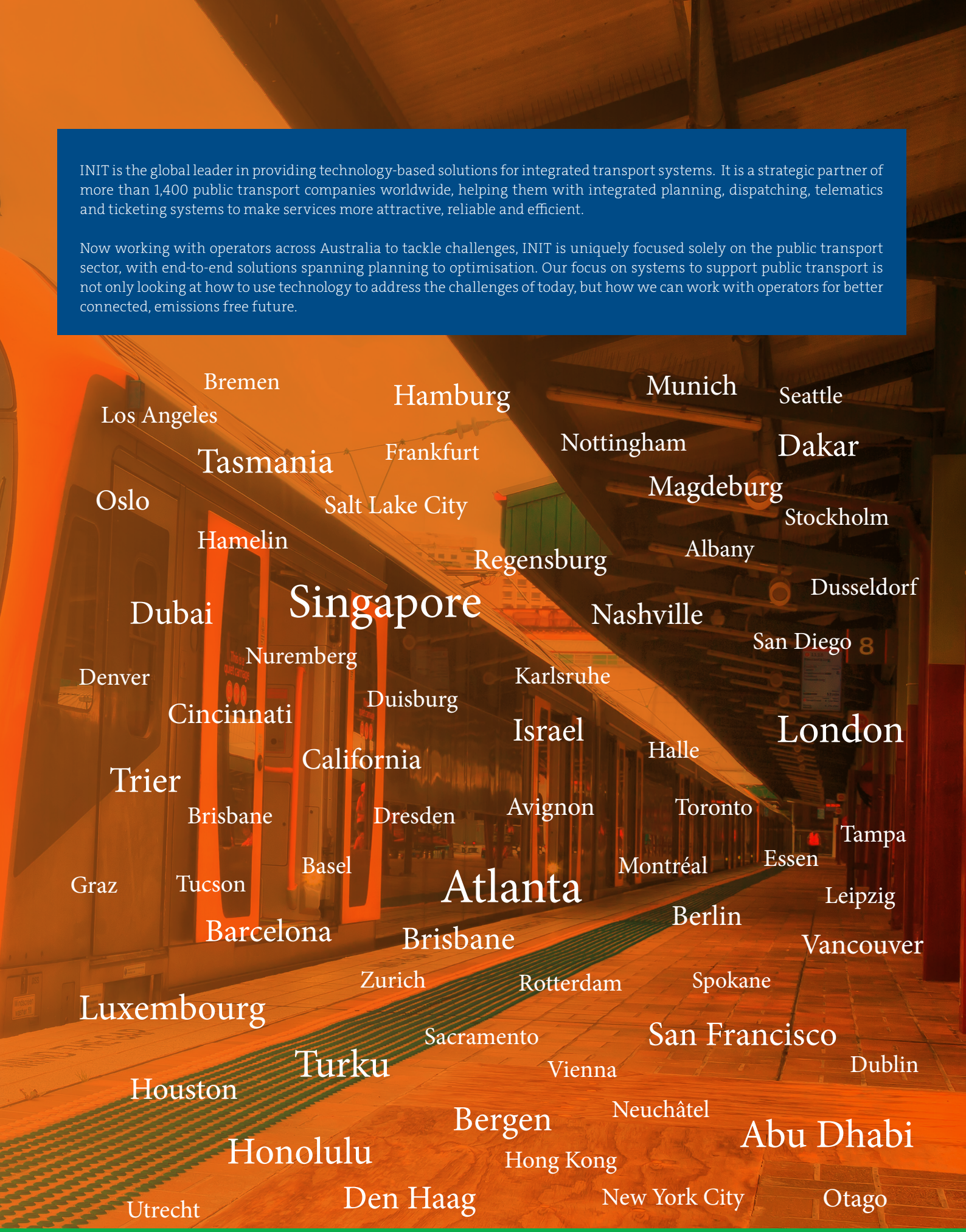
Whilst Suzie is on the light rail journey, the scheduled bus connection has been cancelled due to an unforeseen service disruption.

The INIT solution alerts the depot of the need for a replacement service. Max the driver is alerted. Max started with the company that day and is not aware of the required route, nor is English his first language. The system takes over. Max's on-board screen provides instructions in his first language and clear GPS mapping gets him to his destination.

In the meantime, Suzie's smart watch has just alerted her to the fact that she has an extra 10 mins shopping time until Max and the replacement service arrives

Once home, she gets ready for her concert, with the ticket already including public transport. So as she taps her phone, a token applied to her account by the event organiser, covers her cost of public transport for the night.

This is not a vision, it's the direction public transport is already heading - with INIT, it's within reach«



INIT is the global leader in providing technology-based solutions for integrated transport systems. It is a strategic partner of more than 1,400 public transport companies worldwide, helping them with integrated planning, dispatching, telematics and ticketing systems to make services more attractive, reliable and efficient.

Now working with operators across Australia to tackle challenges, INIT is uniquely focused solely on the public transport sector, with end-to-end solutions spanning planning to optimisation. Our focus on systems to support public transport is not only looking at how to use technology to address the challenges of today, but how we can work with operators for better connected, emissions free future.

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As the world's leading transport technology company providing solutions spanning planning through to ticketing, passenger support and optimisation, INIT Pty Ltd has amassed unmatched knowledge of the public transport sector.

If you wish to gain a deeper understanding of INIT's insights into public transport and its solutions, please reach out to us and we will happily arrange a more detailed briefing.

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INIT is the worldwide leading supplier of integrated planning, dispatching, telematics and ticketing systems for buses and trains. For more than 40 years, we have been assisting transport companies in making public transport more attractive, reliable and more efficient.

The Future of Mobility